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03104704.6 16 December 2003 (16.12.2003) EP

(71) Applicant *(for all designated States except US)*: KONINKLIJKE PHILIPS ELECTRONICS N.V. [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: DYTRYCH, Peter [GB/BE]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

(74) Agents: ELEVELD, Koop, J. et al.; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

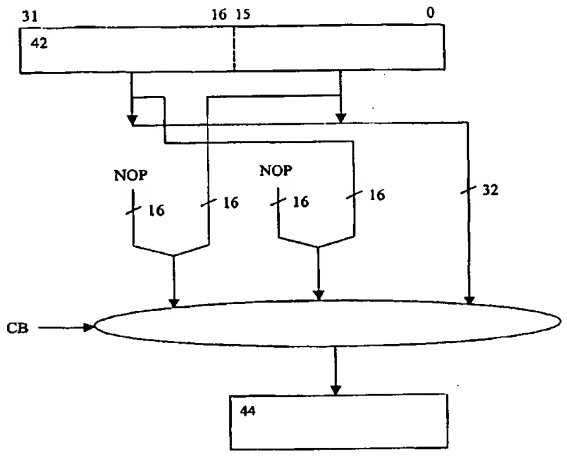
(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE,*

[Continued on next page]

(54) Title: MEMORY-EFFICIENT INSTRUCTION PROCESSING SCHEME



(57) Abstract: In a two-dimensional optical storage (TwoDOS) arrangement, at certain places on the optical disc, calibration pits are placed, for instance in the lead-in and/or additionally sparsely in the data. The signal waveform resulting from the read out of the calibration bits is measured, and matrix multiplication is performed on these signals to obtain the linear interference coefficients. This can be done since the bit sequence is known (along all of the bit-rows of the 2D patterns). From these linear interference coefficients, the electric field distribution of the read-out spots at the pitholes can be reconstructed. This information can be used in at least two ways: The signal processing unit can use this as input for its settings, so it uses a measured response of the optical channel instead of an expected response. The OPU settings can be adapted in order to optimise spot shape and reduce

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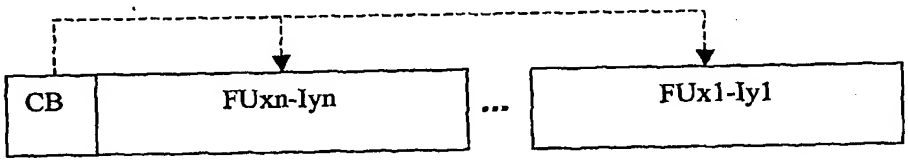
— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

Published:
— *with international search report*

(88) Date of publication of the international search report:
28 December 2006

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: MEMORY-EFFICIENT INSTRUCTION COMPRESSING SCHEME



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INTERNATIONAL SEARCH REPORT

International Application No
PCT/IB2004/052595

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06F9/38 G06F9/30 G06F9/318

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 046 983 A (MITSUBISHI DENKI KABUSHIKI KAISHA) 25 October 2000 (2000-10-25) paragraphs [0003], [0006] - [0016], [0042]	1-13
A	US 6 275 921 B1 (IWATA YASUSHI ET AL) 14 August 2001 (2001-08-14) column 1, line 16 - line 26 column 2, line 3 - line 20 column 6, line 7 - line 14 column 6, line 40 - line 55	1-13
A	EP 1 158 401 A (PTS CORPORATION) 28 November 2001 (2001-11-28) cited in the application paragraphs [0002], [0006] - [0009], [0028], [0048] - [0051]	1-13

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the International filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
2 October 2006	12/10/2006

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Thibaudeau, Jean

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/IB2004/052595

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1046983 A	25-10-2000	DE 60006021 D1	27-11-2003
		DE 60006021 T2	12-08-2004
		JP 2000305781 A	02-11-2000
		TW 548590 B	21-08-2003
		US 6499096 B1	24-12-2002
US 6275921 B1	14-08-2001	JP 11085512 A	30-03-1999
EP 1158401 A	28-11-2001	CN 1326132 A	12-12-2001
		GB 2362733 A	28-11-2001
		GB 2366643 A	13-03-2002
		JP 2002007211 A	11-01-2002
		US 2001047466 A1	29-11-2001

PATENT COOPERATION TREATY

PCT

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference PHNL031445WO	**FOR FURTHER ACTION**	See item 4 below
International application No. PCT/IB2004/052595	International filing date *(day/month/year)* 30 November 2004 (30.11.2004)	Priority date *(day/month/year)* 16 December 2003 (16.12.2003)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant KONINKLIJKE PHILIPS ELECTRONICS N.V.		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).

2. This REPORT consists of a total of 7 sheets, including this cover sheet.

   In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☒	Box No. VII	Certain defects in the international application
☒	Box No. VIII	Certain observations on the international application

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44*bis* .2).

	Date of issuance of this report 21 November 2006 (21.11.2006)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Authorized officer Cecile Chatel e-mail: pt13@wipo.int

Form PCT/IB/373 (January 2004)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43*bis*.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/IB2004/052595	30.11.2004	16.12.2003

International Patent Classification (IPC) or both national classification and IPC
INV. G06F9/38 G06F9/30 G06F9/318

Applicant
KONINKLIJKE PHILIPS ELECTRONICS N.V.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notifed the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:	Date of completion of this opinion	Authorized Officer
European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	see form PCT/ISA/210	Thibaudeau, Jean Telephone No. +49 89 2399-2349

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed

   ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

   a. type of material:

      ☐ a sequence listing

      ☐ table(s) related to the sequence listing

   b. format of material:

      ☐ on paper

      ☐ in electronic form

   c. time of filing/furnishing:

      ☐ contained in the international application as filed.

      ☐ filed together with the international application in electronic form.

      ☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	8,9
	No:	Claims	1-7,10-13
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-13
Industrial applicability (IA)	Yes:	Claims	1-13
	No:	Claims	

2. Citations and explanations

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

1. Reference is made to the following documents:

   D1: EP-A-1 046 983 (MITSUBISHI DENKI KABUSHIKI KAISHA) 25 October 2000 (2000-10-25)

2. **Item V: Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

2.1 The present application does not satisfy the criterion set forth in Article 33(2) PCT because the subject-matter of claims 1, 11, 12 and 13 is not new in respect of the prior art as defined in the regulations (Rule 64(1)-(3) PCT).

2.2 As to claims 1, 12 and 13:
D1 discloses a parallel processing apparatus (and the corresponding compressing method) for processing data based on an instruction word comprising two individual instructions used for controlling two respective functional units (6, 7 - see also paragraph (0003), first four lines and see paragraph (0006)).
Said apparatus comprises means for processing a first individual instruction extracted from a first instruction word, a second individual instruction extracted from a subsequent second instruction word as a new single instruction word (see code example 1 in paragraph (0005), code example 2 in paragraph (0008) and see paragraph (0007), last five lines).

2.3 As to claim 11:
D1 also discloses a method of decompressing an instruction word comprising two individual instructions used for controlling two respective functional units (6, 7).
D1 further discloses the step of checking a control information (FM format specifying bits) added to said instruction word and, in response to said check (paragraph (0009)), extracting said two individual instructions, generating two new instruction words each comprising one of said extracted individual instructions and adding one delay instruction to each of said two new instruction words (see code example 3 in paragraph (0012), execution sequence example 1 in paragraph (0014) and

paragraph (0015)).

2.4 As to the dependent claims:

Dependent claims 2-10 do not appear to contain any additional features which, in combination with the features of any claim to which they refer, are new or involve an inventive step for the following reasons:

D1 already discloses the extraction of said first and second individual instructions if said first and second instruction words each comprise a delay instruction, in fact a NOP instruction (see code examples 1 and 2).
D1 also discloses adding a predetermined control information (FM format specifying bits), said control information indicating the allocation of said individual instructions to respective functional units and a sequential order (see paragraph (0009)). Said control information consist of at least one bit added to the instruction word (see paragraph (0009)).
D1 further discloses that control information is checked (see paragraph (0009) and reestablished first and second instruction words are supplied to an instruction decoder (4, 5).
D1 discloses a VLIW processor (see Abstract).
D1 also takes into account not only NOP instructions but also branch targets when extracting individual instructions (see paragraph (0042)). D1 does not explicitly disclose "marking" instruction words. However said "marking" feature is not further detailed in claim 8. Thus no inventive difference can be seen with the notion of taking into account said NOP and branch targets, which is disclosed in D1.

3. **Item VII: Certain defects in the international application**

i) To meet the requirements of Rule 6.3(b) PCT the independent claims should be properly cast in the two part form, with those features which in combination are part of the prior art (see document D1) being placed in the preamble.

ii) Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art

disclosed in the document D1 is not mentioned in the description, nor is this document identified therein.

4. **Item VIII: Certain observations on the international application**

Claim 7, line 3 should probably read "to re-establish said first and at least **second** instruction words".

Claim 13 should be dependent on claims 11 and 12 (and not 13).